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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,324

07/08/2003

Norikazu Ueyama

OKA-0209

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03/05/2009

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EXAMINER

KOSAR, ANDREW D

ART UNIT

PAPER NUMBER

1654

MAIL DATE

DELIVERY MODE

03/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/614,324	<b>Applicant(s)</b> UEYAMA ET AL.	
	<b>Examiner</b> ANDREW D. KOSAR	<b>Art Unit</b> 1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16, 18, 21 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 18, 21 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendments/Arguments*

Applicant's amendments and arguments filed April 28, 2008 and the reply filed August 22, 2008 are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed below is herein withdrawn.

Claims 16, 18, 21 and 24 are pending and have been examined on the merits.

### *Claim Objections*

**Claims 16 and 24** are objected to because of the following informalities: The use of subscripts in describing the ligands is repugnant to the art. The organometallic chemist understands that subscripts define the number of coordinations the ligand has. For example,  $L_3$  describes a ligand with three L-type ligands,, which are coordination type ligands, such as nitrogens. Thus, it is improper to use subscripts when describing organometallic complexes.

Furthermore, it is repugnant to the art to describe an  $L_3$  type ligand, such as terpyridine, as 'L' or ' $L_2$ ', as L is understood to have only one coordination,  $L_2$  has 2 coordinations, and terpyridine has three.

Applicant is suggested to use superscripts or prime marks (e.g. ' or ") to describe the generic ligands without coordination.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 16, 18, 21 and 24** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant argues that  $L_2$  are sufficiently described in the specification such that one would understand that “terpyridine is considered as  $L_2=1$ ” (remarks, page 7).

Respectfully, the examiner disagrees. The artisan would understand terpyridine to be  $L_3$  using acceptable organometallic chemical formula designations. In light of the specification describing an  $L_3$  ligand as  $L_2$  or  $L_1$ , the artisan is not reasonably apprised of what ligands are, or are not, within the scope of the claim. In light of the specification and Applicant's arguments, the claims are drawn to up to 5  $L_2$  ligands, which are of an indeterminate coordination, and one would not know the metes and bounds of the claim.

It is noted that  $L_1$  or  $3$  has been previously considered as ‘proper’ as there are  $L_1$  and  $L_3$  type ligands, e.g. pyridine and terpyridine.

Claims 17 and 19 recite the general formula  $(L_2)_mM(L_1 \text{ or } 3)$  and that “m is a number of  $L_2$ , indicating 0, 1, 2, 3, 4 or 5,” however it is unclear, particularly in view of the described species of claim 18, whether m is describing the additional coordinations to the metal center or whether it is describing the number of discrete ligands.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

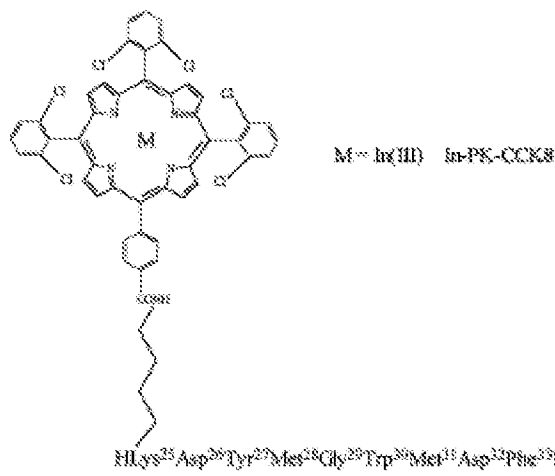
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 16 and 21** remain rejected under 35 U.S.C. 102(b) as being anticipated by DE LUCA (S. De Luca et al. J. Peptide Sci. (2001) 7, pages 386-394).

Applicant argues that the step of determining the sequence from the data is not taught by De Luca. Respectfully, De Luca teaches the sequence, and thus necessarily ‘determined’ the sequence from the data, otherwise it would not have been published as ‘the sequence’.

De Luca teaches formation of In-PKCCK8,



, via amide bonding the side chain ε amine of Lys to the carboxylic acid of the indium(III) porphyrin (page 386). The compound was analyzed by mass spectroscopy (Page 386, “Mass spectra obtained...”), thus meeting the limitations of the claims- forming a conjugate and analyzing the peptide/complex conjugate by mass spectroscopy and determining the sequence from the data.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

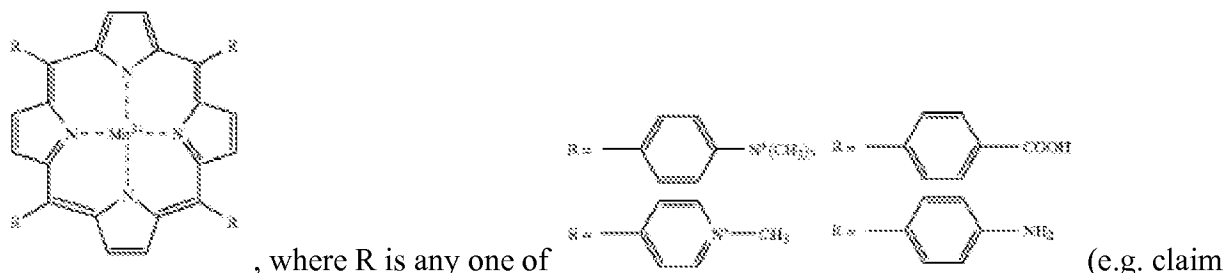
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Applicant argues that because the references do not teach the determination of the sequence from the data, the claims are neither anticipated or rendered obvious. Respectfully, as discussed above, De Luca necessarily analyzed the data and determined the sequence, otherwise it would not have been published as 'the sequence'. Had the MS data disagreed with the expected sequence, the described peptide would have been different, or the results would have remained unpublished.

**Claims 16, 21 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over DE LUCA, *supra*, in view of TAMIKA (H. Tamiaka et al. Bull. Chem. Soc. Jpn. (1993) 66(10), 3062-3068) and CRAPO (US Patent 5,994,339).

The teachings of De Luca are presented *supra*. Crapo teaches the complex:



5). Because there are so few choices for R, one could envisage each and every combination.

Tamiaka teaches conjugation of porphyrins to a peptide through the amine of a phenylamine group (e.g. Scheme 1, page 3063) and analysis of the product by mass spectroscopy (e.g. compound 5Z, page 3068- "*MS m/z 1152*"). Crapo teaches a myriad of peptides can be formed. Furthermore, substituted tetraphenyl porphyrins with a myriad of substitutions on the phenyl moiety are well known by the artisan skilled in the porphyrin arts, as evidenced by Crapo. Additionally, De Luca teaches metallation of the porphyrin prior to conjugation with the peptide.

The difference between the instant claims and the teachings of Tamiaki is that while Tamiaki teaches conjugation of the peptide to the porphyrin through the porphyrin phenylamine group and the analysis by mass spectroscopy, Tamiaki does not teach using the metallated porphyrin in the synthesis.

Selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see, e.g., *Ex parte Rubin*, 128 USPQ 440, 1959, and *In re Burhans*, 154 F.2d 690, 69 USPQ 330 - CCPA 1946) MPEP § 2144.04. Here, the only difference is the

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step at which the metallation occurs. Thus, it would have been obvious to have metallated the complex prior to the peptide conjugation in the absence of new or unexpected results.

Alternatively, it would have been obvious to have used any of the porphyrins of Crapo in the method of forming a peptide conjugate to the porphyrin, as both De Luca and Tamiaki teach conjugation through both the carboxylates and amines of the peptide with equal success in doing so. Crapo teaches porphyrins which bear both carboxylates and amines which are capable of conjugating and are closely related to the porphyrins of De Luca and Tamiaki. The reference are relied upon for the reasons discussed above. If not expressly taught, based upon the overall beneficial teaching provided by the references with respect to peptide conjugation to porphyrins in the manner disclosed therein, the selection of the conjugating group for connecting the peptide and the porphyrin is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a). From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.



*Allowable Subject Matter*

**Claim 18** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The closest prior art of record, e.g. Storrier, teaches the probe, however it does not teach or suggest, alone or in combination with any other art of record, the attachment to a protein or the subsequent MS analysis.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW D. KOSAR whose telephone number is (571)272-0913. The examiner can normally be reached on Monday - Friday 08:00 - 16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia J. Tsang can be reached on (571)272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew D Kosar/  
Primary Examiner, Art Unit 1654